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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,383

07/14/2005

Kensuke Ogawa

Q88674

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

ROJAS, OMAR R

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

08/06/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/542,383

Applicant(s)

OGAWA ET AL.

Examiner

Omar Rojas

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on May 9, 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Detailed Action.

## **DETAILED ACTION**

### ***Response to Amendment***

1. With regards to the amendment filed on May 9, 2007, all the requested changes to the claims have been entered. Claims 1-10 are pending.

### ***Response to Arguments***

2. Applicant's arguments filed May 9, 2007 have been fully considered but they are not persuasive.

- a. With regards to applicant's comments concerning the Information Disclosure Statement, see page 5 of the response filed May 9, 2007, applicant's attention is directed to MPEP § 1893.03(g). As clearly stated in the MPEP, when copies of the search report documents are not present in the national stage file, "*applicant must follow the procedure set forth in 37 CFR 1.97 and 1.98 in order to ensure that the examiner considers the documents cited in the international search report.*" MPEP § 1893.03(g). Therefore, it is the responsibility of applicant(s) to ensure that the prior art documents are present in the application file. It is NOT the responsibility of the examiner to furnish copies of prior art documents cited by applicant(s).

- b. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities: Claim 1 does not begin with a capital letter. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patent No. US 6,731,846 B2 to Hosomi et al. ("Hosomi") in view of Patent No. US 6,760,513 B1 to Heitmann et al. ("Heitmann"). The Hosomi patent was cited in a prior Office action.**

*In re* claim 1, discloses a dispersion compensation element (Figures 1a-1c) compensating chromatic dispersion of an optical pulse input from outside, characterized by comprising:

a waveguide 5 guiding said optical pulse from an input edge to an output edge; and  
dispersion varying means ( $5_1-5_n$ ) for making variable the absolute value of the chromatic dispersion and for making variable the sign of chromatic dispersion given to said optical pulse in said waveguide. See columns 6-8 of Hosomi for further details.

Thus, Hosomi only differs from claim 1 in that Hosomi does not expressly disclose varying the sign of chromatic dispersion independently from varying the absolute value of the chromatic dispersion. Heitmann, on the other hand, discloses in Figures 3 and 5 equivalent structures ( $NLO_1-NLO_n$ ) for varying the sign of chromatic dispersion independently from varying the absolute value of the chromatic dispersion. See Hosomi at columns 3-4 for further details. The motivation for combining Heitmann with Hosomi is mentioned at column 4, lines 51-53 of Heitmann (i.e., "fine tune the desired additional dispersion"). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 1 in view of Hosomi combined with Heitmann.

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**6. Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosomi in view of Heitmann as applied to claim 1 above, and further in view of Patent No.**

**6,931,189 B2 to Lee et al. ("Lee"). The Lee patent was cited in a prior Office action.**

*In re* claim 2, the devices of Hosomi and Heitmann both comprise a photonic crystal (i.e. two materials having different dielectric constants alternately and periodically arranged).

*In re* claim 7, Heitmann also discloses supplying a voltage for changing the refractive index of each region ( $NLO_1-NLO_n$ ) independently (column 1, lines 41-48).

Thus, Hosomi in view of Heitmann only differs from claims 2 and 7 in that Hosomi in view of Heitmann does not disclose "a plurality of regions different in combination of the size and the interval of one said material existing in the other said material are arranged along a direction in which said waveguide continues". Lee, on the other hand, shows in Figure 6, a plurality of regions 22-24 different in combination of the size and the interval of one said material existing in the other said material are arranged along a direction in which said waveguide continues as reference numerals. The motivation for combining Lee with Hosomi in view of Heitmann would have been to reduce coupling losses when coupling together different types of waveguide structures (i.e., an optical fiber coupled to a photonic crystal structure). See Lee's Abstract. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 2 and 7 in view of Hosomi combined with Heitmann, and further in view of Lee.

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*In re* claims 3-6, the recited limitations are considered to be functional in nature and do not describe any additional device structure. Because Hosomi combined with Heitmann and Lee disclose all the positively recited structural features of claims 1 and 2, the functional limitations of claims 3-6 are considered inherently present when Hosomi, Heitmann, and Lee are combined to obtain the invention specified by claim 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 3-6 in view of Hosomi combined with Heitmann, and further in view of Lee.

**7. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosomi combined with Heitmann and Lee as applied to claim 7 above, and further in view of Patent No. 5,570,439 to Ido et al. ("Ido"). The Ido patent was cited in a prior Office action.**

*In re* claims 8-10, the previous remarks are incorporated herein. Hosomi combined with Heitmann and Lee only differs from claims 8-10 in that none of the patents disclose changing the refractive index of at least part of the waveguide by changing the carrier density using a voltage supplied to the waveguide. Ido, however, teaches that a waveguide can have its refractive index adjusted by applying a voltage to the waveguide thereby changing the carrier density. *See* Ido at column 4, lines 7-11. The motivation for combining Ido with Hosomi, Heitmann, and Lee would have been to adjust the wavelength of the light to be dispersion compensated. *See* Ido at column 2, lines 11-15. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 8-10 in view of Hosomi combined with Heitmann and Lee, and further in view of Ido.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (9:00PM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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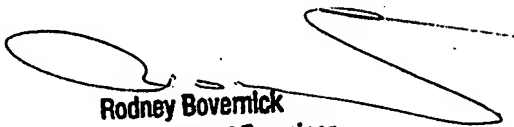
applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Omar Rojas/

Patent Examiner, Art Unit 2874

or

July 27, 2007



Rodney Bovermick  
Supervisory Patent Examiner  
Technology Center 2800